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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,522	11/20/2001	Alain Lavie	216200US6	8607
22850	7590	12/30/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			KIM, TAE JUN	
			ART UNIT	PAPER NUMBER
			3746	
DATE MAILED: 12/30/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,522

Applicant(s)

LAVIE ET AL.

Examiner

Ted Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goeddeke (6,351,948) in view of van Os (3,972,690) and optionally Kear et al (3,224,679). Goeddeke teaches a main fuel injector for a turbomachine [of or for a two-headed combustion chamber has been treated as statement of intended use] having means for delivering a primary fuel comprising a first inner fuel feed tube 90 for a primary fuel passage connected to an annular injection piece having first fuel injection orifice 72 for discharging primary fuel into the combustor, means for delivering a secondary fuel comprising a second feed tube 100 surrounding the first feed tube 90 and connected to a cylindrical endpiece having a second injection orifice 80 for discharging secondary fuel into the combustion chamber. Goeddeke do not teach an annular channel surrounding the annular injection piece with a third tube and tubular separation element for delivering a cooling fluid.

Van Os teach a fuel injector having a fuel line 3 and a cooling jacket 7 formed by a third tube, a tubular separation element shown immediately adjacent for allowing

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cooling fluid to-flow from an first outer space/duct to the fuel nozzle and return via a second inner space/duct. Van Os further teach the third tube of the cooling jacket has a greater diameter than the fuel tube 3 and extends over its entire length beyond its fuel injection orifices. Van Os do not specifically discuss the flow channels/spaces being annular, but making these annular is entirely within the ordinary skill in the art as the annular configuration is the simplest to manufacture and would have radial uniformity of cooling. It is clear, at least, that the illustration of Van Os does not exclude annular passages. In order to remove any doubt, Kear teach annular passages 9, 10 for a cooling jacket is entirely old and well known in the art. It would have been obvious to one of ordinary skill in the art to employ a third tube around the endpiece of Goeddeke, with annular passages in order to prolong its life.

3. Claims 1-6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goeddeke (6,351,948) in view of Kuypers et al (4,858,538) and optionally Kear (3,224,679). Goeddeke teaches a main fuel injector for a turbomachine [of or for a two-headed combustion chamber has been treated as statement of intended use] having means for delivering a primary fuel comprising a first inner fuel feed tube 90 for a primary fuel passage connected to an annular injection piece having first fuel injection orifice 72 for discharging primary fuel into the combustor, means for delivering a secondary fuel comprising a second feed tube 100 surrounding the first feed tube 90 and connected to a cylindrical endpiece having a second injection orifice 80 for discharging secondary fuel into the combustion chamber. Goeddeke do not teach an annular channel surrounding the

annular injection piece with a third tube and tubular separation element for delivering a cooling fluid.

Kuypers et al teach a fuel injector having a fuel line 12 and a cooling jacket formed by a third tube 10, a tubular separation element shown immediately adjacent for allowing cooling fluid to flow from an first annular outer space/duct 30 to the fuel nozzle and return via a second inner space/duct 34. Kyupers et al further teach the third tube of the cooling jacket has a greater diameter than the feed tubes and extends over its entire length beyond the fuel injection orifices 16. Kyupers appears to have annular flow channels/spaces being annular, and making these annular is entirely within the ordinary skill in the art as the annular configuration is the simplest to manufacture and would have radial uniformity of cooling. In order to obviate any doubt, Kear et al teach annular passages 9 and 10 for cooling a fuel injector. It would have been obvious to one of ordinary skill in the art to employ a third tube around the endpiece of Goeddeke, with annular passages in order to prolong its life.

4. Claims 1-6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goeddeke (6,351,948) in view of either Kepplinger et al (5,127,346), Kear et al (3,224,679) and further in view of Kuypers et al (4,858,538). Goeddeke teaches a main fuel injector for a turbomachine [of or for a two-headed combustion chamber has been treated as statement of intended use] having means for delivering a primary fuel comprising a first inner fuel feed tube 90 for a primary fuel passage connected to an annular injection piece having first fuel injection orifice 72 for discharging primary fuel

into the combustor, means for delivering a secondary fuel comprising a second feed tube 100 surrounding the first feed tube 90 and connected to a cylindrical endpiece having a second injection orifice 80 for discharging secondary fuel into the combustion chamber. Goeddeke do not teach an annular channel surrounding the annular injection piece with a third tube and tubular separation element for delivering a cooling fluid.

Kear et al teach a fuel injector having a fuel line 14 and a cooling jacket formed by a third tube 7, a tubular separation element shown immediately adjacent for allowing cooling fluid to flow from an first annular outer space/duct to the fuel nozzle and return via a second inner space/duct 9, 10 where the connection to the supply and return is not shown. Kear et al further teach the third tube of the cooling jacket has a greater diameter than the feed tubes and extends over its entire length beyond the fuel injection orifices 15. Kepplinger et al teach a fuel injector having a fuel line 4 and a cooling jacket formed by a third tube 5, a tubular separation element shown 10 immediately adjacent for allowing cooling fluid to flow from an first annular outer space/duct to the fuel nozzle and return via a second inner space/duct where the connection to the supply and return is not shown. Kear et al further teach the third tube of the cooling jacket has a greater diameter than the feed tubes and extends over its entire length beyond the fuel injection orifices. As Kear et al and Kepplinger et al specifically make it clear that the supply and return for the coolant is not illustrated. Kyupers et al, among many other references, teaches it is old and well known to supply the coolant to the inner passage and return via the outer passage. It would have been obvious to one of ordinary skill in the art to employ a third

tube around the endpiece of Goeddeke, in order to prolong its life and supply the coolant to the inner passage and return via the outer passage, as being a conventional supply and return path for such a coolant.

5. Claims 5, 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Goeddeke (6,351,948) combinations, as applied above and further in view of Ansart (5,642,621). Goeddeke et al teach various aspects of the claimed invention but do not particularly show a two headed combustion chamber. Ansart shows that using fuel injectors for a two headed 20, 21 combustion chamber P is entirely old and well known in the art. It would have been obvious to one of ordinary skill in the art to employ the injector with a two headed combustion chamber, as a conventional combustor geometry.

Allowable Subject Matter

6. Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Amendment

7. Applicant's amendment filed 8/8/03 amend around the Sakurai et al reference. However, applicant's arguments regarding Van Os are not persuasive. Applicant argues that Van Os cannot have annular ducts. The Examiner disagrees, noting that there is nothing in the Van Os disclosure that teaches away from using annular ducts. Consequently, making the ducts in an annular fashion using simple cylindrical tubes, which is what appears to be illustrated, is a logical or entirely conventional way of

construction. However, in order to address applicant's concerns, Kear et al specifically teaches using annular passages for the cooling jacket is entirely old and well known in the art.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

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The fax numbers for the organization where this application is assigned are

703-872-9306 for Regular faxes and 703-872-9306 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu, can be reached on 703-308-2675.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861.

General inquiries can also be directed to Technology Center Customer Service Office at 703-306-5648 or the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at

<http://www.uspto.gov/main/patents.htm>



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